

AMENDMENTS TO THE CLAIMS

Claims 1-11 (Canceled)

12. (New) A process for isomerizing pentenenitrile in a reaction stream, wherein the isomerization takes place over at least one heterogeneous catalyst, selected from the group of the oxides of main group 3 or 4 or of the oxides of transition group 3 or 4 of the Periodic Table of the Elements, in a distillation column at least comprising a bottom zone, a reaction zone and a top zone, and, during the isomerization, the isomerization reactant is distillatively enriched in the reaction zone of the distillation column in relation to the isomerization product.
13. (New) The process according to claim 12, wherein cis-2-pentenenitrile is isomerized to trans-3-pentenenitrile.
14. (New) The process according to claim 13, wherein the trans-3-pentenenitrile is obtained in the bottom of the distillation column and the cis-2-pentenenitrile in the top of the distillation column.
15. (New) The process according to claim 12, wherein the heterogeneous catalyst used is alumina.
16. (New) The process according to claim 12, wherein the heterogeneous catalyst used is alumina which comprises silicon dioxide, titanium dioxide, iron dioxide, alkali metal oxides, alkaline earth metal oxides, rare earth oxides or mixtures thereof.
17. (New) The process according to claim 12, wherein the heterogeneous catalyst is introduced into a structured packing which forms interstices in the column interior, the quotient of the hydraulic diameter for the gas stream through the structured packing or random packing and the equivalent diameter of the catalyst particles being from 2 to 20, so that the catalyst particles can be loosely inserted into the interstices under the action of gravity, distributed and discharged again if required, and the structured packing forms other interstices in which the quotient of the hydraulic diameter for the gas stream through the structured packing or the random packing and the equivalent diameter of the catalyst particles is less than 1, so that no catalyst particles can be inserted into the second subregions.

18. (New) The process according to claim 12, wherein the isomerization is additionally carried out in the presence of a homogeneous catalyst.
19. (New) The process according to claim 18, wherein the reaction is carried out in the presence of an ionic liquid as a homogeneous catalyst, the ionic liquid being selected from the group consisting of Brønsted acid adducts of organic nitrogen-containing substances.
20. (New) The process according to claim 18, wherein the catalyst used is a C1- to C20-mono- or -diamine.
21. (New) The process according to claim 12, wherein the reactant stream comprises further components selected from the group consisting of C5-mononitriles, C6-dinitriles, aliphatic C1- to C16-alkanes, cyclic C1- to C16-alkanes, aliphatic C1- to C16-alkenes, cyclic C1- to C16-alkenes.
22. (New) The process according to claim 12, wherein the reactant stream stems from a process for hydrocyanating 3-pentenitrile.
23. (New) The process according to claim 12, wherein the temperature in the bottom zone of the distillation column is from 30°C to 300°C.